REMARKS

STATUS OF CLAIMS

The Office Action dated November 6, 2002 has been received and its contents carefully considered. Claims 1-26 are pending. Claim 1 has been canceled without prejudice or disclaimer. Claim 2-4, 7-11, 15, 17-21 and 23-26 have been amended. Claims 23 and 26 are independent.

Reconsideration and withdrawal of the outstanding rejections are respectfully requested in view of the following remarks.

OFFICE ACTION

Acknowledgment of applicant's foreign priority claim based on applications filed in Germany on July 13, 2000 and April 25, 2001 was made. However, the certified copy of the German applications was required by 35 U.S.C. §119(b).

Claims 3, 8 and 10 were objected to because of noted informalities. Claims 1-5, 7, 11-13, 18, 19 and 24-26 were rejected under 35 U.S.C. §102(b) as being anticipated by Fukuyama et al. '059. Claims 6, 8, 14 and 15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Fukuyama et al. '059 in view of Andrey '931. Claims 10, 21 and 22 were rejected under 35 U.S.C. §103(a) as being unpatentable over Fukuyama et al. '059 in view of Takahata et al. '967. Claims 9, 17, 20 and 23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Fukuyama et al. '059 in view of Klein et al. '998. Claim 16 was rejected under 35 U.S.C. §103(a) as being unpatentable over Fukuyama et al. '059 in view of Andrey '931 as applied to claim 15 above, and further in view of Klein et al. '998. These objections and rejections are respectfully traversed with respect to the following reasons.

The claim objections have been obviated by the above amendments to claims 3, 8 and 10 accordingly. The priority documents have been requested from applicant and are pending.

Without conceding the propriety of the rejections, the present invention in claim 23, in part, recites the first permanent magnet configuration comprises an integrated lower part of the rotor cup. Fukuyama et al. '059 shows a rotor assembly 25, a first superconducting magnetic bearing 27, a first permanent magnet configuration 26, and a motor 53. For anticipation under 35 U.S.C. §102 the reference must teach every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught must be inherently present (M.P.E.P. 706.02). Since each and every element, as set forth in the claim, is not found either expressly or inherently described as required by the M.P.E.P, Fukuyama et al. '059 cannot be said to anticipate the first permanent magnet configuration comprises an integrated lower part of the rotor cup of the present invention as claimed. Thus, Fukuyama et al. '059 cannot be said to teach or suggest the first permanent magnet configuration comprises an integrated lower part of the rotor cup.

In addition, the present invention in claim 8 recites, in part, a rotor cup having a substantially cylindrical housing projecting therefrom, the cylindrical housing having an inside face and an outside face; and the first permanent magnet configuration comprises a plurality of discrete permanent magnets, each permanent magnet being disposed at a discrete location on the inside face of the cylindrical housing along the length thereof, at least a portion of the first superconducting magnet stator being disposed within the cylindrical housing. Fukuyama et al. '059 shows a rotor assembly 25, a first superconducting magnetic bearing 27, a first permanent magnet configuration 26, and a motor 53. Andrey '931 shows a permanent magnet configuration that at least partially surrounds the first superconducting magnet stator (at FIG. 18) and permanent magnets disposed at discrete locations on the inside face of the cylindrical

housing along the length thereof (at FIG. 16). Neither Fukuyama et al. '059 nor Andrey '931 teach or suggest a rotor cup having a substantially cylindrical housing projecting therefrom, the cylindrical housing having an inside face and an outside face; and the first permanent magnet configuration comprises a plurality of discrete permanent magnets, each permanent magnet being disposed at a discrete location on the inside face of the cylindrical housing along the length thereof, at least a portion of the first superconducting magnet stator being disposed within the cylindrical housing as presently claimed. In accordance with the M.P.E.P. §2143.03, to establish a *prima facie* case of obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re: Royka, 490 F.2d 981, 180 USPQ 580 (CCPA 1974).* "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re: Wilson, 424 F.2d 1382, 1385, 165 USPQ 494 196 (CCPA 1970).* Thus, Fukuyama et al. '059 in view of Andrey '931 cannot be said to teach or suggest a rotor cup having a substantially cylindrical housing projecting therefrom, the cylindrical housing having an inside face and an outside face; and the first permanent magnet configuration comprises a plurality of discrete permanent magnets, each permanent magnet being disposed at a discrete location on the inside face of the cylindrical housing along the length thereof, at least a portion of the first superconducting magnet stator being disposed within the cylindrical housing.

Furthermore, the present invention in claim 26 recites, in part, wherein the permanent magnet configuration and the magnet stator comprise at least one passive superconducting magnetic bearing and wherein the permanent magnet configuration comprises an integrated lower part of the rotor unit. Fukuyama et al. '059 shows a rotor assembly 25, a first superconducting magnetic bearing 27, a first permanent magnet configuration 26, and a motor 53. For anticipation under 35 U.S.C. §102 the reference must teach every aspect of the claimed

invention either explicitly or impliedly. Any feature not directly taught must be inherently present (M.P.E.P. 706.02). Since each and every element, as set forth in the claim, is not found either expressly or inherently described as required by the M.P.E.P, Fukuyama et al. '059 cannot be said to anticipate the permanent magnet configuration and the magnet stator comprise at least one passive superconducting magnetic bearing and wherein the permanent magnet configuration comprises an integrated lower part of the rotor unit of the present invention as claimed. Thus, Fukuyama et al. '059 cannot be said to teach or suggest the permanent magnet configuration and the magnet stator comprise at least one passive superconducting magnetic bearing and wherein the permanent magnet configuration comprises an integrated lower part of the rotor unit. It should be noted that the term "rotor" in the centrifuge art consists primarily of the specimen holder mounted at the end of the drive or rotor shaft.

With respect to the secondary references, Takahata et al. '967 shows a concentric magnet radially fitted (at FIG. 3) and Klein et al. '998 shows a dampening/collector ring disc 17; permanent magnets 20, 21; and rotor cup 1. It should be noted that reference numeral 6 in Klein et al. '998 is a magnetic bearing only (col. 2, lines 47-50) and not a rotor cup as presently claimed. Thus, neither Takahata et al. '967 nor Klein et al. '998 teach or suggest the invention as presently claimed.

For the foregoing reasons, it is respectfully submitted that the invention recited in claims 23 and 26 is patentable over Fukuyama et al. '059 taken alone or in combination with Klein et al. '998, Takahata et al. '967, and/or Andrey '931. Thus, it is respectfully submitted that the remaining depending claims are allowable for at least the reasons given herein.

In view of the foregoing, reconsideration and allowance of the application are believed in order, and such action is earnestly solicited.

Should the Examiner believe that a telephone conference would expedite issuance of the application, the Examiner is respectfully invited to telephone the undersigned at 202/861-1748.

Respectfully submitted,

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Attachment – Appendix

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APPENDIX

VERSION WITH MARKINGS SHOWING CHANGES MADE

IN THE CLAIMS

Claim 1 has been canceled without prejudice or disclaimer.

Claims 2-4, 7-11, 15, 17-21 and 23-26 have been amended as follows:

2. (Amended) A centrifuge according to claim [1] 23, wherein magnet field lines of the first permanent magnet configuration penetrate approximately perpendicular into at least one surface of the first superconducting magnet stator.

3. (Amended) A centrifuge according to claim [1] 23, wherein the position of rotor axis includes an [angel] angle from 0 to 90 degrees relative to a horizontal plane.

4. (Amended) A centrifuge according to claim [1] 23, wherein the first permanent magnet configuration comprises at least one permanent magnet ring or a permanent magnet cylinder, the first superconducting magnet stator being at least partially disposed in radial alignment with the first permanent magnet configuration.

7. (Amended) A centrifuge according to claim [1] 23, wherein:

the rotor assembly comprises a rotor mounted on a drive shaft; and

the first permanent magnet configuration comprises a plurality of discrete permanent magnets, each permanent magnet being disposed at a discrete location along the length of the drive shaft, the first superconducting magnet stator encircling the drive shaft.

8. (Amended) A centrifuge according to claim [1] 23, wherein:

the rotor assembly comprises a rotor cup having a substantially cylindrical housing projecting therefrom, the cylindrical housing having an inside face and an outside face; and

the first permanent magnet configuration comprises a plurality of discrete permanent magnets, each permanent magnet being disposed at a discrete location on the inside face of the cylindrical housing along the length thereof, at least a portion of the first superconducting magnet stator [begin] being disposed within the cylindrical housing.

9. (Amended) A centrifuge accordingly to claim [1] 23, wherein the first permanent magnet configuration comprises:

a plurality of discrete permanent magnets; and

a collector ring disc disposed between each of the permanent magnets.

10. (Amended) A centrifuge according to claim [1] 23, wherein first permanent magnet configuration comprises a first permanent magnet concentrically disposed within a second permanent magnet [r].

11. (Amended) A centrifuge according to claim [1] 23, wherein the first superconducting magnet stator is connected to a cryogenic unit configured to cool the first superconducting magnet stator.

15. (Amended) A centrifuge according to claim [1] 23, wherein first superconducting magnet stator comprises a melt textured multi-grain material of high mechanical stability configured to produce damping properties of the magnetic bearing.

17. (Amended) A centrifuge according to claim [1] <u>23</u>, further comprising:

a passive second superconducting magnet stator; and

a damping disc interposed between the first and second superconducting magnet stator, the damping disc being formed from copper, aluminum or their basic alloys.

18. (Amended) A centrifuge according to claim [1] <u>23</u>, wherein the first superconducting magnet stator has the geometry of a ring or hollow cylinder.

19. (Amended) A centrifuge according to claim [1] <u>23</u>, wherein first permanent magnet configuration comprises at least one permanent magnet a substantially ring or cylinder like configuration, the permanent magnet being mounted coaxially about the rotor axis.

20. (Amended) A centrifuge according to claim [1] <u>23</u>, wherein the first permanent magnet configuration comprises a plurality of axial magnetized rings stacked axially with adjacent equal polarities and comprising a high radial magnet flux density.

21. (Amended) A centrifuge according to claim [1] <u>23</u>, wherein the first permanent magnet configuration comprises at least two annular permanent magnets mounted concentrically one in another in a plane whereby the rings are radially adjacent fitted.

23. (Amended) <u>A centrifuge comprising:</u>

<u>a rotor assembly rotatable about a rotor axis, the rotor assembly being configured to hold materials for separation;</u>

<u>a first superconducting magnetic bearing comprising:</u>

<u>a first permanent magnet configuration coupled with the rotor assembly so as to rotate concurrently with the rotor assembly; and</u>

a passive first superconducting magnet stator being spaced apart from the first permanent magnetic configuration and the rotor assembly, the first superconducting magnet stator and first permanent magnet configuration being sufficiently close together to produce a magnetic field interaction therebetween; and

a motor coupled with the rotor assembly for selectively rotating the rotor assembly,

[A centrifuge according to claim 1,] wherein the first permanent magnet configuration comprises an integrated lower part of the rotor cup.

24. (Amended) A centrifuge according to claim [1] 23, wherein the first permanent magnet configuration comprises a single ring or cylinder like permanent magnet.

25. (Amended) A centrifuge according to claim [1] 23, further comprising:

a second superconducting magnetic bearing spaced apart from the first superconducting magnetic bearing, the second superconducting magnetic bearing comprising:

a second permanent magnet configuration coupled with the rotor assembly so as to rotate concurrently with the rotor assembly; and

a passive second superconducting magnet stator being spaced apart from the second permanent magnetic configuration and the rotor assembly, the second superconducting magnet stator and first permanent magnet configuration being sufficiently close together to produce a magnetic field therebetween.

26. (Amended) Centrifuge with a rotor unit to process and separate different dense materials has at least one bearing and is combined with a driving device rotatable around the rotor axis, wherein at least one part of the rotor unit is influenced by magnetic forces and is characterized in that the rotor arrangement [(1)] comprises at least one permanent magnet configuration [(6, 7, 8, 9, 11, 12, 13, 14; 6', 11', 35)] which interacts at given small distance with at least one adjacent superconducting magnet stator [(19, 20; 19', 20'; 36)] wherein the permanent magnet

configuration and the magnet stator comprise at least one passive superconducting magnetic bearing <u>and wherein the permanent magnet configuration comprises an integrated lower part of the rotor unit</u>.